An Introduction to MOVES:
Output Processing

FHWA Resource Center
EPA Office of Transportation and Air Quality

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Output Presentation Outline

- **An exploration of output results.**
- **Post-Processing Menu**
  - Summary Report.
  - MySQL Scripts.
  - State/County Map.
- **Feel free to ask questions!**

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MOVES Output

- **All of the results of a MOVES run are stored in MySQL database tables.**
- **These results can be accessed by:**
  - Using MOVES post-processing tools.
  - Using MySQL query commands.
  - Using the MySQL Query Browser software.
  - Using Microsoft Access with a MySQL ODBC.
- **Any table may be exported to other applications (i.e., MS Excel) for further processing.**

3

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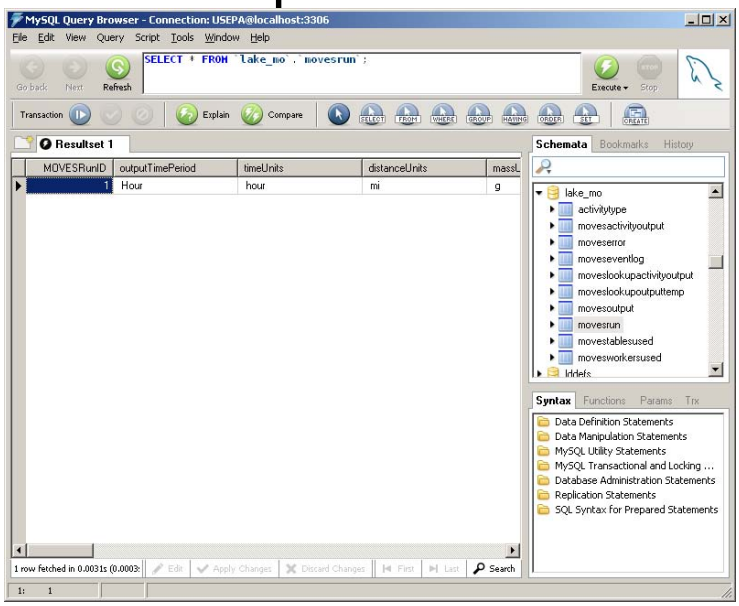
Output Tables

- **MOVESOutput – Contains the emission results.**
- **MOVESActivityoutput – Contains the distance.**
- **MOVESRun - Information about the run.**
- **Emission Rate Output:**
  - MOVESLookupOutput
  - MOVESLookupActivityOutputTemp
- **Diagnostic Tables:**
  - ActivityType, MOVESError, MOVESTablesUsed, MOVESWorkersUsed and MOVESEventLog tables are used for run diagnostics.

4

Output Tables



5

MOVESOutput Table

- **MOVESRunID**
- **iterationID**
- **yearID**
- **monthID**
- **dayID**
- **hourID**
- **stateID**
- **countyID**
- **zoneID**
- **linkID**
- **pollutantID**
- **processID**
- **sourceTypeID**
- **fuelTypeID**
- **modelYearID**
- **roadTypeID**
- **SCC**
- **emissionQuant**
- **emissionQuantMean**
- **emissionQuantSigma**

6

MOVESActivityOutput Table

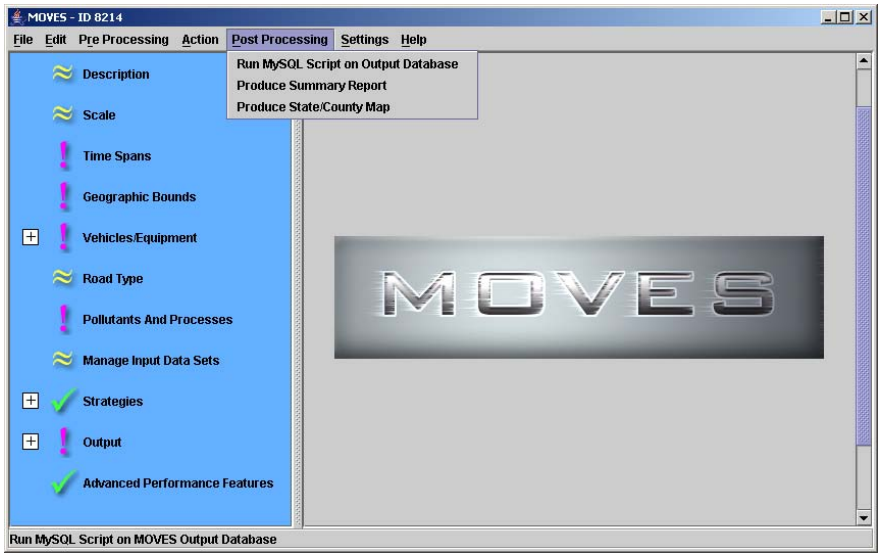
- **MOVESRunID**
- **iterationID**
- **yearID**
- **monthID**
- **dayID**
- **hourID**
- **stateID**
- **countyID**
- **zoneID**
- **linkID**
- **sourceTypeID**
- **fuelTypeID**
- **modelYearID**
- **roadTypeID**
- **SCC**
- **activityTypeID**
- **activity**
- **activityMean**
- **activitySigma**

7

MOVESRun Table

- **MOVESRunID**
- **outputTimePeriod**
- **timeUnits**
- **distanceUnits**
- **massUnits**
- **energyUnits**
- **runSpecFileName**
- **runSpecDescription**
- **runSpecFileDateTime**
- **runDateTime**
- **Scale**
- **minutesDuration**
- **defaultDatabaseUsed**
- **masterVersionDate**
- **masterComputerID**
- **domain**
- **domainCountyID**
- **domainCountyName**
- **domainDatabaseServer**
- **domainDatabaseName**

Post-Processing Menu



9

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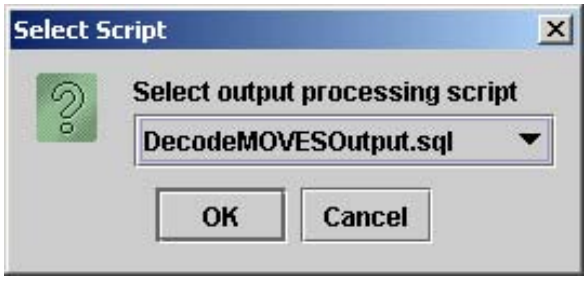
Post-Processing Menu

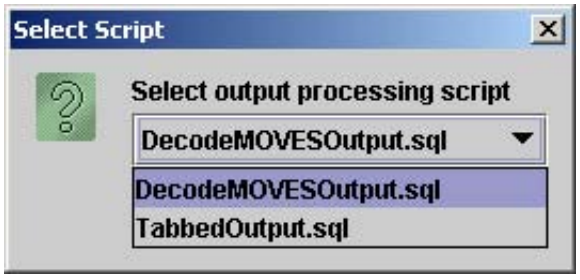
- **Use this menu once you have results.**
- **You select an existing output database using the runspec used to generate the results.**
- **Options for processing output include:**
  - Execute existing MySQL scripts.
  - Summarize results into text files.
  - Graphically represent results in a county map.

10

Post-Processing Scripts



Post-Processing Scripts



12

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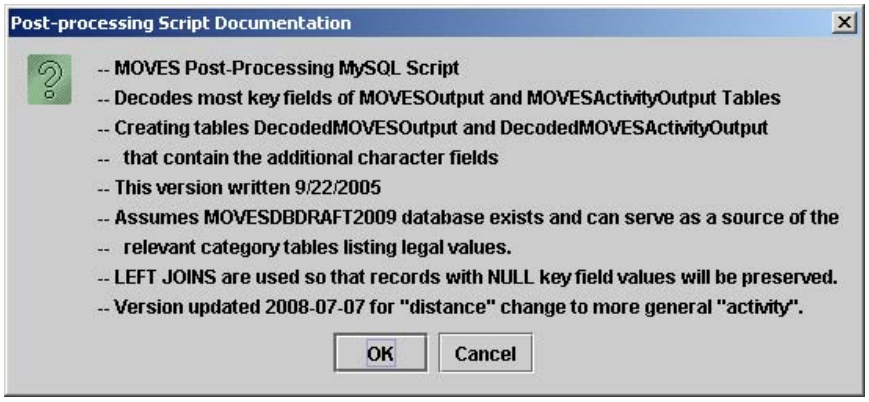
Post-Processing Scripts

- The scripts are applied to the latest RunID in the current output database selected by the runspec.
- You can select previous runs from the database using the MOVES Run Error Log window from the pull down Action menu.
- These are simply MySQL command scripts stored in the /database/OutputProcessingScripts folder of the MOVES application installation.
- Users may write their own scripts and add them to the folder or add scripts obtained from other users.

13

Decode MOVES Output Script



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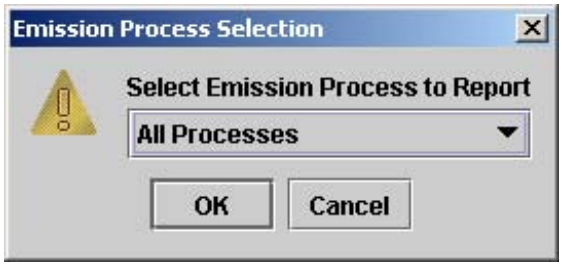
Post-Processing Scripts- Warning!

- **Read the script documentation!**
  - Scripts may require that you run MOVES is a particular way.
  - Scripts may require specific units.
- **As we get more experience with using MOVES, new scripts will likely be written.**
- **Do you have ideas for useful scripts? Send them to mobile@epa.gov.**

15

Produce Summary Report



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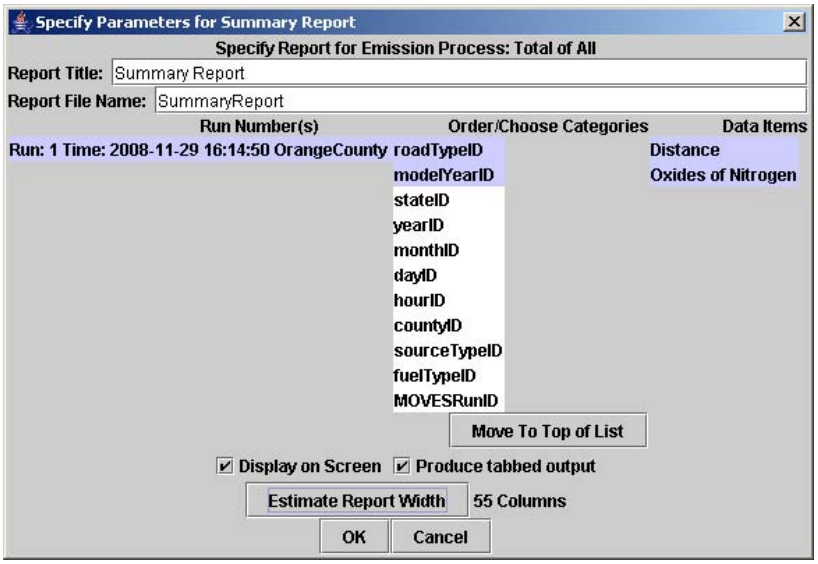
Summary Report

- You select the database you wish to summarize using the runspec.
- Select which process you wish to summarize.

17

Summary Report



18

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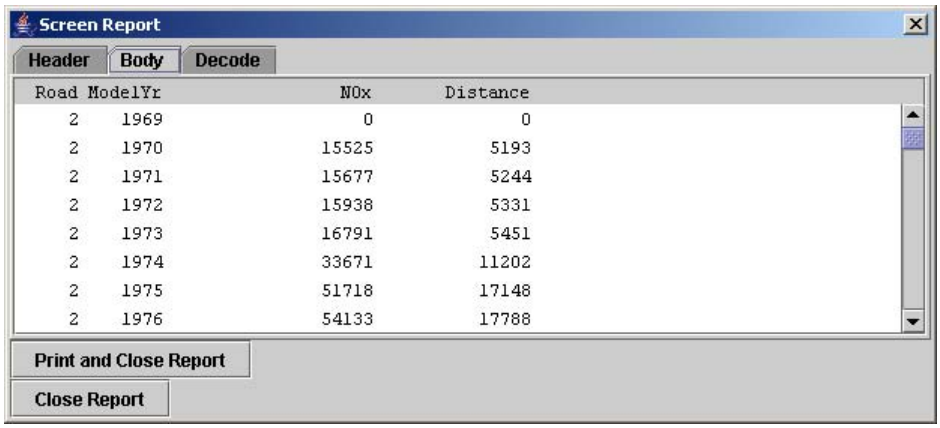
Summary Report

- Name Summary Report Table and File
- Choose the Run from the list available in the database.
- Choose the categories of the summary and their order.
- Choose the pollutants included in the summary.
- Display on screen and/or text file output.
- Estimate column width for text file.
- Results will also be stored in a MySQL table in the output database for the runspec.

19

Summary Report: Body



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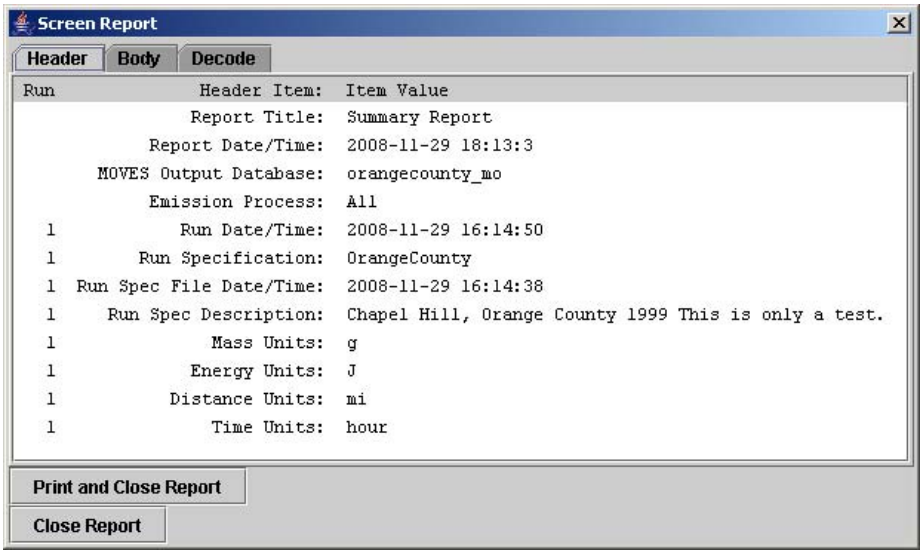
Summary Report Body

- Sums the pollutants you selected into the categories you specified.
- Note that the road type categories are indicated by their numeric codes.

21

Summary Report: Header



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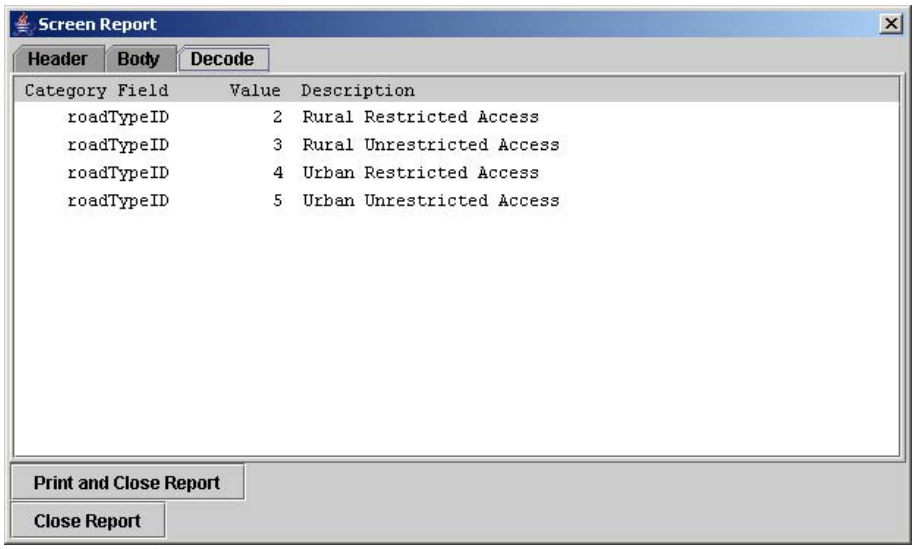
Summary Report: Header

- **The header information shows you information about the summary results including:**
  - The units of the values.
  - The run ID and database from which the data was taken.
  - The description of the run you put in the runspec.
  - The date and time the report was generated.

Summary Report: Decode



24

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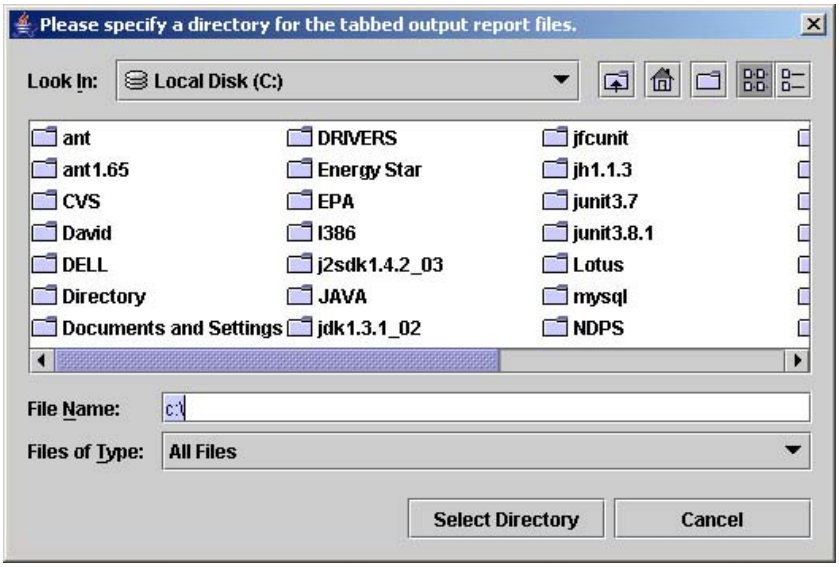
Summary Report: Decode

- The decode tab will show descriptive text for most of the numeric codes used in the body of the report.

25

Summary Report: Save



26

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Summary Report: Save

- If you chose to save tabbed output, you will be prompted for a location to place the files generated by the Summary Report.
- Three files will be written:
  - SummaryReportBody.tab
  - SummaryReportHeader.tab
  - SummaryReportDecode.tab
- These text files can be opened by any word processor or spreadsheet application.

27

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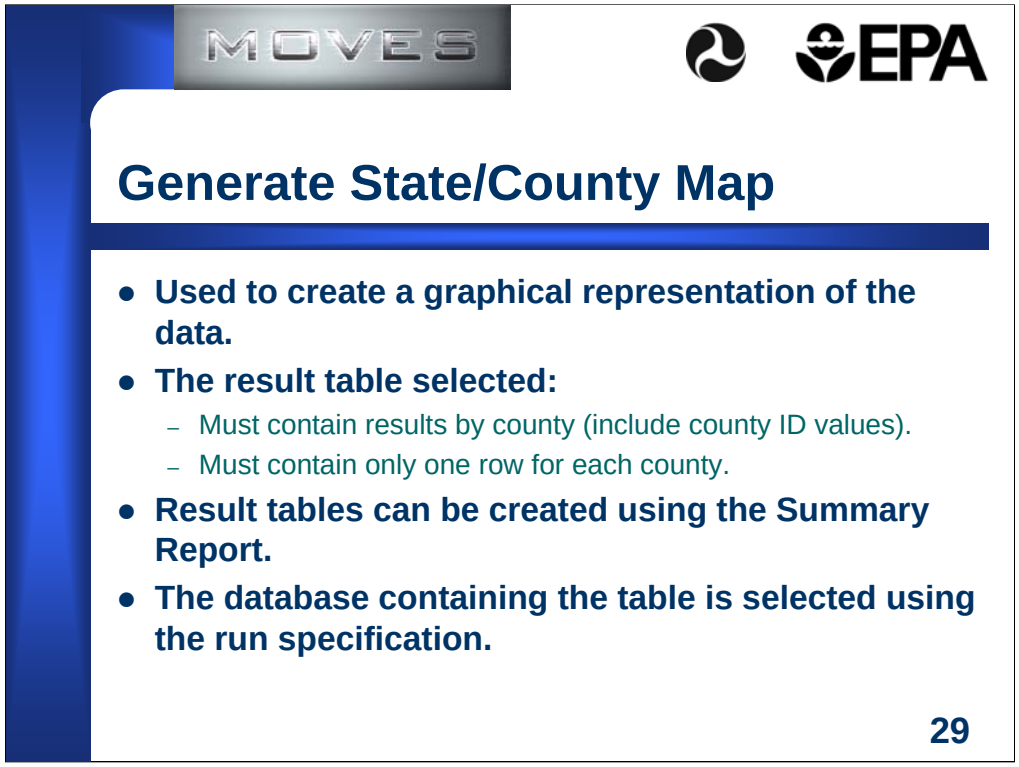
Summary Report Features

- You can produce multiple summary reports from the same database by using different names.
- The Summary Report can be used to aggregate the more detailed results.
- Allows the user to specify a more detailed output in the Output Emissions Detail and produce multiple reports with varying level of detail from the same run.

28



We are not demonstrating this feature.

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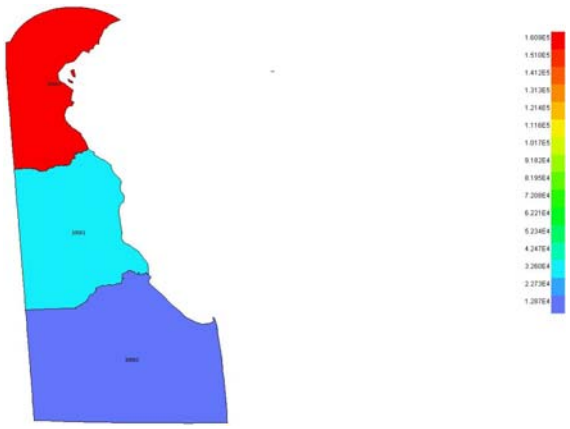
MOVES Map Example - Delaware



30

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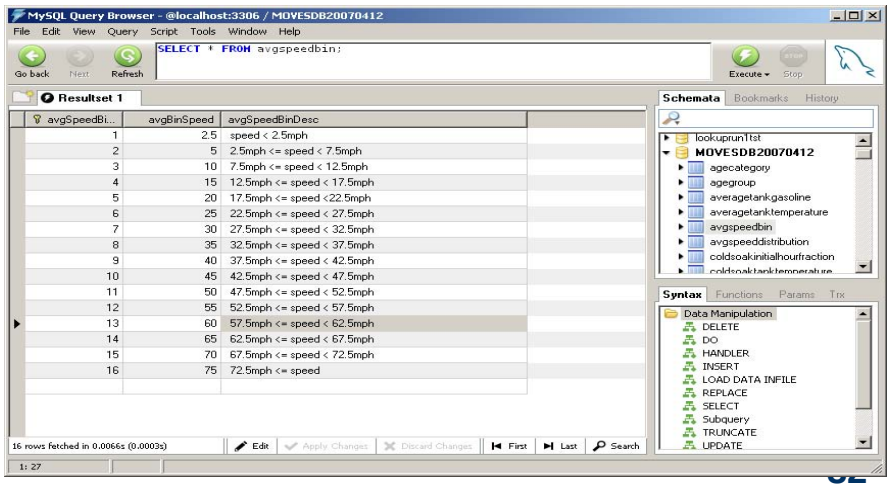
Other Post-Processing

- **Export the data using the MySQL script.**
- **Export the data using the MySQL Browser.**
  - CSV
  - MS Excel
  - PLIST
- **Use the data from MS Access using the ODBC.**

MySQL Query Browser



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MySQL Query Browser

- Provided with the MOVES model
- Windows tool for viewing databases, executing queries, and editing tables
- Resultsets can be exported as csv or Excel files
- Built-in Help files
- Records query history, so you can repeat queries without retyping them
- Tables can be edited directly, rather than using MySQL commands
  - Table must have a key to be edited directly

33

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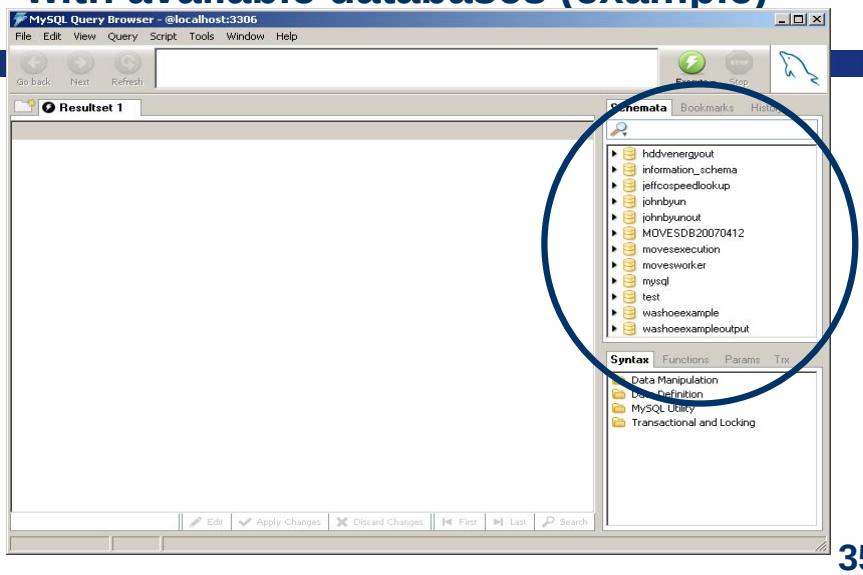
Exploring MOVES Databases with Query Browser

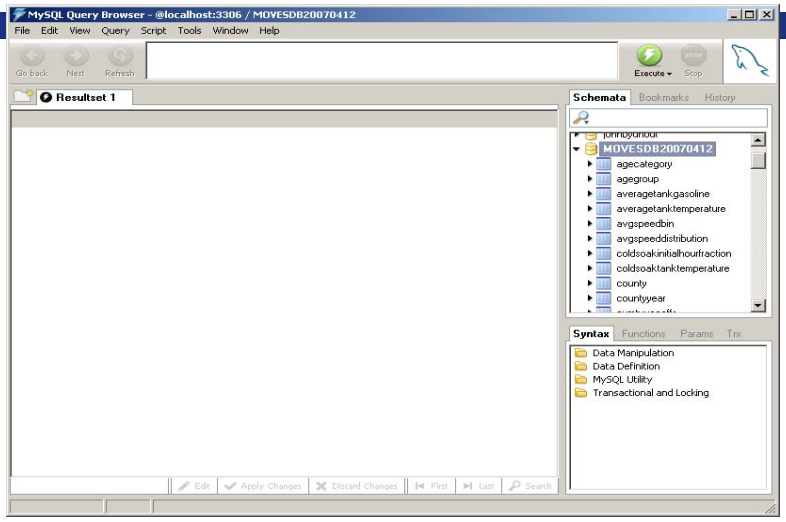
- **We'll demonstrate some simple MySQL commands in Query Browser**
  - Commands are shown in the slide headings and screenshots
  - Note that some screenshots show older versions of MOVES and/or output databases you won't have on your computer
- **To Open Query Browser (don't need to do this now):**
  - Start/Programs/MySQL/MySQL Query Browser
  - Make sure "localhost" is specified (might not be after initial installation) and click OK
    - **Click "ignore" on warning message about schema**
    - **You can suppress this message for future use**

34

MySQL Query Browser opening view with available databases (example)



Double-clicking on the MOVES default database opens up tables



36